

AMENDMENT AND RESPONSE**PAGE 15**

Serial No.: 09/723,013

Attorney Docket No. 100.046US02

Filing Date: November 27, 2000

Title: CIRCUITS AND METHODS FOR A RING NETWORK

REMARKS

Applicant has reviewed the Office Action mailed on July 13, 2004, as well as the art cited. Claims 52-116 are pending in this application.

Claim Objections

Claim 59 was objected to for the informality of reciting "PLI" rather than "PCI". Applicant has amended claim 59 as suggested by the Examiner. Accordingly, Applicant respectfully requests reconsideration and withdrawal of this objection to claim 59.

Double Patenting Rejection

Claims 52-90, 93-99, 102-106, 109-113 and 116 were rejected under the judicially created doctrine of double patenting over claims 1-12, 16 and 18-48 of U.S. Patent No. 6,154,462.

A Terminal Disclaimer in compliance with 37 CFR 1.321(b)(iv) is enclosed herewith to over come these rejections.

Rejections Under 35 U.S.C. § 102

Claims 109-110, 113 and 116 were rejected under 35 USC § 102(b) as being anticipated by McCreary, (U.S. Patent No. 5,384,566). Respectfully, Applicant traverses this rejection.

Respectfully, Applicant disagrees with the Examiner's assertion, that claims 109-110, 113 and 116 are anticipated by McCreary. Unlike the present application, McCreary does not claim or disclose an invention which either switches or routes data packets received from a ring network to a local network. According to McCreary, a ring network packet which arrives at device 20 from the ring network are either *copied* for subsequent transmission to a local network 18 or *ignored* by station 28,30 (col. 4 line 55-63, col. 6 line 11-23, claims 1, 7 and 10). In either case, "After receipt of the frame 48, and possible *copy*, the frame 48 is forwarded on the network 12, 14. As implied above, this occurs at each device 20 on the network 12, 14 until the frame 48 returns to the particular network 18 from which it was originally transmitted. There it will be stripped." (col. 6 line 23-28). With one exception, according to McCreary, ring packets entering

AMENDMENT AND RESPONSE

PAGE 16

Serial No.: 09/723,013

Attorney Docket No. 100.046US02

Filing Date: November 27, 2000

Title: CIRCUITS AND METHODS FOR A RING NETWORK

device 20 subsequently exit from device 20 back to the ring. Therefore, only duplicates of ring packet are transmitted to a local network 18. The one exception is when a frame 48 "returns to the particular network 18 from which it was originally transmitted. There it will be stripped." (col. 6 line 27-28).

In contrast, each of the independent claims of the present application calls for an apparatus or method that either *switches* or *routes* packets on or off of the ring network to their destination (page 17, lines 12-17).

This distinction is significant because, unlike McCreary, a ring network of the present application need not waste bandwidth by continuing to carry excess data frames around the ring back to their originator for elimination. Under the present invention, frames are typically eliminated from the ring as they are switched off to their destination. Frames return to the originating ring switch only if the "incoming data packet is either improperly addressed, a broadcast packet, or a multicast packet" (page 18, line 1-7).

For example, claim 109 specifies "*routing* the data packets that are destined for a network device associated with at least one local port of the ring switch to the at least one local port." Claim 116 specifies "*switching* the data packets that are destined for a network device associated with at least one local port of the ring switch to the at least one local port of the ring switch". These claims illustrate the point discussed above that ring packets indicating a destination local to the ring switch are switched off of the ring network and transmitted to their local destination, rather than just copied from the ring network. Applicant respectfully asserts that McCreary does not disclose or describe systems or methods for routing or switching ring packets to local destinations as called for in independent claims 109 and 116 of the present application.

Applicant respectfully asserts that claims 109, and 116, and claims 110 and 113 which depend directly or indirectly from claim 109, are allowable. Withdrawal of the rejections is respectfully requested. Because the Applicant believes claims 109-110, 113 and 116 are allowable for the above reasons, Applicant may not have put forth responses to additional rejections to said claims at this time. However, the Applicant reserves the right to address said additional rejections to said claims if a further response is required.

AMENDMENT AND RESPONSE

Serial No.: 09/723,013

Filing Date: November 27, 2000

Title: CIRCUITS AND METHODS FOR A RING NETWORK

PAGE 17

Attorney Docket No. 100.046US02

Rejections Under 35 U.S.C. § 103

Claims 52-53, 56, 58, 60-62, 66-67, 70, 73-76, 78-80, 82-84, 86-90, 93-99, 102-103, 105-106, 109-110, 112-113 and 116 were rejected under 35 USC § 103(a) as being unpatentable over Knish (U.S. Patent No. 4,933,937) in view of McCrary, (U.S. Patent No. 5,384,566).

Respectfully, Applicant traverses this rejection.

Regarding claims 52-53, 56, 58, 60-62, 66-67, 70, 75-76, 78-80, 82-82, 86-90, 93-99, 102-103, 105-106, 109-110, 112-113 and 116, Knish in view of McCrary fails to teach or suggest each and every element of Applicant's claims. As discussed above, Applicant notes that McCrary describes *copying* ring network packets for subsequent transmission to a local network (col. 4 line 55-63, col. 6 line 11-23, claims 1, 7 and 10). In contrast, each of the independent claims 52, 61, 67, 75, 80, 86, 93, 102, 109 and 116 of the present application calls for an apparatus or method that either *switches* or *routes* packets on or off of the ring network to their destination (page 17, lines 12-17). For example, in claim 52 "the ring switch switches data packets between its ring and local ports to direct the data packets to specified network devices." Further, claim 75 includes "*removing* data packets from the ring at a local port of the ring switch when a destination identifier in the data packet indicate that the *destination network device* is located on a local port of the ring switch." Claim 80 specifies "*selectively switching* the data packets around and *off the ring network* based on identifiers of the data packets that identify a *destination network* of the system." Claim 86 specifies "if the *destination address* of the data packet is associated with a network device *that is local* to the at least one ring switch, the data packet is *transmitted out one or more local ports* of the at least one ring switch, *otherwise*, if the destination address of the data packet is not associated with a network device that is local to the at least one ring switch, the data packet is *transmitted out a second ring port*". Claim 93 specifies "data packets received at the at least one ring port that are *destined for* a network device associated with any of the at least one *local ports* on the ring switch based on the at least one address table *are removed from the ring and switched out the local port*." Claim 102 specifies "data packets received at a ring port that are *destined for* a network device associated with a *local port* of the ring switch are *switched off the ring*". Claim 109 specifies "*routing* the data packets

AMENDMENT AND RESPONSE

PAGE 18

Serial No.: 09/723,013

Attorney Docket No. 100.046US02

Filing Date: November 27, 2000

Title: CIRCUITS AND METHODS FOR A RING NETWORK

that are destined for a network device associated with at least one local port of the ring switch to the at least one local port. Claim 116 specifies "switching the data packets that are destined for a network device associated with at least one local port of the ring switch to the at least one local port of the ring switch". These claims illustrate the point discussed above that ring packets indicating a destination local to the ring switch are switched off of the ring network and transmitted to their local destination, rather than just copied from the ring network. Further, McCreary disclosed that all ring packets continue propagation on the ring until the packet returns to its source. (col. 6 line 27-28). According to McCreary, the destination is relevant only as to whether a packet should be copied to a local network. (col. 6 line 16-19). In contrast, under the present invention, frames are returned to the originating ring switch only if the "incoming data packet is either improperly addressed, a broadcast packet, or a multicast packet" (page 18, line 1-7). For example, in Claim 61 "data packets received at a ring port that are *not destined* for a network device associated with a local port of the ring switch *are switched to another ring switch*". Claim 67 is similarly directed at "[a] ring switch for a ring network" where packets "not destined for a network device associated with any of the at least one local ports of the ring are switched to another ring." As discussed above, this distinction is significant because, unlike McCreary, a ring network of the present application need not waste bandwidth by continuing to carry excess data frames around the ring back to their originator for elimination.

Applicant respectfully asserts that McCreary does not disclose or describe systems or methods for routing or switching ring packets to local destinations as called for in claims 52, 61, 67, 75, 80, 86, 93, 102, 109 and 116 of the present application. As the Examiner asserted; Knish also does not disclose or describe systems or methods for switching packets received off of a ring network and onto a local network based on the packets destination address. Therefore, Knish in view of McCreary fails to teach or suggest each and every element of Applicant's claims.

In view of the foregoing, Applicant respectfully asserts that independent claims 52, 61, 67, 75, 80, 86, 93, 102, 109 and 116 and claims 53, 56, 58, 60, 62, 66, 70, 76, 78-79, 82, 87-90, 94-99, 103, 105-106, 110, and 112-113, which depend directly or indirectly from the independent claims, are allowable. Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a). Because the Applicant believes claims 52-53, 56, 58, 60-62, 66-67, 70, 75-76, 78-80, 82-82, 86-90, 93-99, 102-103, 105-106, 109-110, 112-113 and 116 are

AMENDMENT AND RESPONSE

Serial No.: 09/723,013

Filing Date: November 27, 2000

Title: CIRCUITS AND METHODS FOR A RING NETWORK

PAGE 19

Attorney Docket No. 100.046US02

allowable for the above reasons, Applicant may not have put forth responses to additional rejections to said claims at this time. However, the Applicant reserves the right to address said additional rejections to said claims if a further response is required.

Regarding claim 73, Applicant respectfully asserts that Knish in view of McCreary fails to teach or suggest each and every element of Applicant's claims. Neither Knish or McCreary disclose or describe systems or methods "wherein the address table is adapted to associate the address of network devices with *the ring-out port* when data packets are received at *the ring-in port*" as is taught in claim 73 of the present application. Applicant respectfully asserts that claim 73, and claim 74 which depends directly from claim 73, are allowable and respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a). Because the Applicant believes claims 73 and 74 are allowable for the above reasons, Applicant may not have put forth responses to additional rejections to said claims at this time. However, the Applicant reserves the right to address said additional rejections to said claims if a further response is required.

Regarding claim 83, Applicant respectfully asserts that Knish in view of McCreary fails to teach or suggest each and every element of Applicant's claims. Knish describes "[a] table memory stores an address transformation table (AT table)" wherein "an address pair consisting of a node address and a LAN address, of a LAN to which a node indicated by the node address belongs, is registered in the AT table." (Abstract). Neither Knish or McCreary disclose or describe systems or methods "storing the source address in an address table for the first ring switch that indicates that the data packet originated from a network device, not including another of the plurality of ring switches, *associated with a second, different port of the first ring switch so as to allow unidirectional transmission on the ring network*" as taught in claim 83 of the present invention. Applicant respectfully asserts that claim 83, and claim 84 which depends directly from claim 83, are allowable and respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a). Because the Applicant believes claims 83 and 84 are allowable for the above reasons, Applicant may not have put forth responses to additional

AMENDMENT AND RESPONSE

PAGE 20

Serial No.: 09/723,013

Attorney Docket No. 100.046US02

Filing Date: November 27, 2000

Title: CIRCUITS AND METHODS FOR A RING NETWORK

rejections to said claims at this time. However, the Applicant reserves the right to address said additional rejections to said claims if a further response is required.

Claims 54, 55, 57, 59, 63-65, 68-69, 71-72, 77-79, 81, 85, 91-92, 100-101, 104, 107,108, 111 and 114-115 were rejected under 35 USC § 103(a) as being unpatentable over Knish (U.S. Patent No. 4,933,937) in view of McCreary, (U.S. Patent No. 5,384,566) as applied to claims 52, 61, 67, 80, 83, 86, 93, 102 and 109 above, and further in view of Chin (U.S. Patent No. 5,617,421). Respectfully, Applicant traverses this rejection.

Regarding claims 54, 55, 57, 59, 63-65, 68-69, 71-72, 77-79, 81, 85, 91-92, 100-101, 104, 107,108, 111 and 114-115, Knish in view of McCreary, and further in view of Chin, fails to teach or suggest each and every element of Applicant's claims.

As discussed above, Applicant notes that McCreary describes *copying* ring network packets for subsequent transmission to a local network (col. 4 line 55-63, col. 6 line 11-23, claims 1, 7 and 10). In contrast, each of the independent claims 52, 61, 67, 71, 77, 80, 93, 102 and 109 of the present application calls for an apparatus or method that either *switches* or *routes* packets on or off of the ring network to their destination (page 17, lines 12-17). For example, in claim 52 "the ring switch switches data packets between its ring and local ports to direct the data packets to specified network devices." Claim 77 specifies "switching the data packet to the port of the ring switch that is associated with the destination address". Claim 80 specifies "selectively switching the data packets around and *off the ring network* based on identifiers of the data packets that identify a *destination* network of the system." Claim 93 specifies "data packets received at the at least one ring port that are *destined for* a network device associated with any of the at least one *local ports* on the ring switch based on the at least one address table *are removed from the ring and switched out the local port.*" Claim 102 specifies "data packets received at a ring port that are *destined for* a network device associated with a *local port* of the ring switch are *switched off the ring*". Claim 109 specifies "*routing* the data packets that are destined for a network device associated with at least one local port of the ring switch to the at least one local port. These claims illustrate the point discussed above that ring packets indicating a destination

AMENDMENT AND RESPONSE

PAGE 21

Serial No.: 09/723,013

Attorney Docket No. 100.046US02

Filing Date: November 27, 2000

Title: CIRCUITS AND METHODS FOR A RING NETWORK

local to the ring switch are switched off of the ring network and transmitted to their local destination, rather than just copied from the ring network. Further, McCreary disclosed that all ring packets continue propagation on the ring until the packet returns to its source. (col. 6 line 27-28). According to McCreary, the destination is relevant only as to whether a packet should be copied to a local network. (col. 6 line 16-19). In contrast, under the present invention, frames are returned to the originating ring switch only if the "incoming data packet is either improperly addressed, a broadcast packet, or a multicast packet" (page 18, line 1-7). For example, in Claim 61 "data packets received at a ring port that are *not destined* for a network device associated with a local port of the ring switch *are switched to another ring switch*". Claim 67 is similarly directed at "[a] ring switch for a ring network" where packets "not destined for a network device associated with any of the at least one local ports of the ring are switched to another ring." Claim 71 discloses "the ring switch allows data packets received at the ring port to be retransmitted out the ring port of the switch so that data packets can be forwarded on to other ring switches in the ring network." As discussed above, this distinction is significant because, unlike McCreary, a ring network of the present application need not waste bandwidth by continuing to carry excess data frames around the ring back to their originator for elimination.

In view of the foregoing, Applicant respectfully asserts that independent claims 52, 61, 67, 71, 77, 80, 93, 102 and 109 are allowable. Therefore, claims 54, 55, 57, 59, 63-65, 68-69, 71-72, 77-79, 81, 91-92, 100-101, 104, 107, 108, 111 and 114-115, which depend directly or indirectly from the independent claims, are allowable. Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a). Because the Applicant believes claims 54, 55, 57, 59, 63-65, 68-69, 71-72, 77-79, 81, 91-92, 100-101, 104, 107, 108, 111 and 114-115 are allowable for the above reasons, Applicant may not have put forth responses to additional rejections to said claims at this time. However, the Applicant reserves the right to address said additional rejections to said claims if a further response is required.

Regarding claim 85, Applicant respectfully asserts that Knish in view of McCreary and Chin fails to teach or suggest each and every element of Applicant's claims. Knish describes "[a] table memory stores an address transformation table (AT table)" wherein "an address pair consisting of a node address and a LAN address, of a LAN to which a node indicated by the node

AMENDMENT AND RESPONSE**PAGE 22**

Serial No.: 09/723,013

Attorney Docket No. 100.046US02

Filing Date: November 27, 2000

Title: CIRCUITS AND METHODS FOR A RING NETWORK

address belongs, is registered in the AT table." (Abstract). Neither Knish or McCrary or Chin disclose or describe systems or methods "storing the source address in an address table for the first ring switch that indicates that the data packet originated from a network device, not including another of the plurality of ring switches, *associated with a second, different port of the first ring switch so as to allow unidirectional transmission on the ring network*" as taught in claim 83 of the present invention.

Applicant respectfully asserts that claim 83, and claim 85 which depends directly from claim 83, are allowable and respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a). Because the Applicant believes claims 83 and 85 are allowable for the above reasons, Applicant may not have put forth responses to additional rejections to said claims at this time. However, the Applicant reserves the right to address said additional rejections to said claims if a further response is required.

CONCLUSION

Applicant respectfully submits that claims 52-116 are in condition for allowance and notification to that effect is earnestly requested. If necessary, please charge any additional fees or credit overpayments to Deposit Account No. 502432.

If the Examiner has any questions or concerns regarding this application, please contact the undersigned at (612) 332-4720.

Respectfully submitted,



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